Final Environmental Assessment

Munitions Maintenance and Inspection Facility

Prepared for

Arnold Air Force Base

Prepared by

SAIC
From Science to Solutions

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Finding of No Significant Impact

Arnold Air Force Base, Tennessee

Munitions Maintenance and Inspection Facility

Arnold Air Force Base (AFB) has prepared an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the construction of a Munitions Maintenance and Inspection Facility.

Description of the Proposed Action

The Proposed Action is to install a portable duplex building (approximately 44 feet by 27 feet) with steel walls on a concrete pad. The facility would be used to perform initial assembly, bench test, inspection, and minor maintenance of various conventional and nonconventional munitions and their respective components to include explosive bridge wire and rocket motor components. The building would have electrical, potable water, sewage, and local area network (LAN) utilities. The facility would consist of three large unobstructed work bays, co-located field offices, a large surrounding apron to support vehicle usage, flow-through access, and an overhead hoist system in one bay. The large apron would include an access drive and parking at an area of approximately 2,000 square feet. A security fence would also be constructed around the facility, with an access gate across the facility driveway entrance.

No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. Activities proposed for the new facility would continue to take place at Building 2228; authorization for the use of Building 2228 for these activities expires in 2010. Arnold AFB would not have a properly sited facility in accordance with Department of Defense (DoD) Standard 6055.9 and Air Force Manual (AFMAN) 91-201 explosive safety standards to provide the capability to maintain and inspect explosive materials and test articles.

Environmental Consequences

Proposed Action:

Under the Proposed Action, less than 1 acre of soil would be disturbed. No surface waters are at or adjacent to the site. In addition, best management practices would be implemented to minimize the potential for sedimentation of area streams. As a result, no negative impacts to soils or water quality would occur. Hazardous materials used during construction and operation of the proposed new facility would be managed within the existing hazardous material pharmacy (HAZMART) distribution system.

Hazardous waste generated during construction and operation of the proposed new facility would be managed through existing procedures in the Arnold AFB Hazardous Waste Management Plan. No Installation Restoration sites are at or in close proximity to the Proposed Action site.

No Action Alternative:

Under the No Action Alternative, no construction activities would occur. As a result, no soil disturbance or potential water quality impacts would occur. In addition, hazardous materials and wastes associated with the new construction would not be used or generated.

Public/Agency Review

The Air Force published a public notice in the *Tullahoma News, Herald Chronicle,* and *Manchester Times* once per week for four weeks starting on 3 February 2010 notifying the public of the Air Force's intent to sign a Finding of No Significant Impact (FONSI). The Air Force also provided the following agencies copies of the EA for review and comment: Tennessee Department of Environment and Conservation (TDEC) Office of General Counsel, TDEC Division of Water Pollution Control, and TDEC Division of Air Pollution Control.

The public comment and agency review period ended on 3 March 2010. No public or agency comments were received.

Conclusion

The attached EA was prepared pursuant to 32 Code of Federal Regulations (CFR) 989 and U.S. Council on Environmental Quality (CEQ) regulations (40 CFR 1500–1508) for implementing the procedural requirements of the National Environmental Policy Act (NEPA). The finding of this EA is that the Proposed Action would have no significant impact on the human or natural environment. A FONSI is issued, and no Environmental Impact Statement (EIS) is required.

Restrictions

No restrictions are necessary for the Proposed Action.

Saroya T. Follender — 6 April 2010

SAROYA FOLLENDER, Lt. Colonel, USAF — Date
Commander, 704th Civil Engineer Squadron (AFMC)

Final Environmental Assessment

Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

Prepared for

Arnold Air Force Base

March 2010

PRINTED ON RECYCLED PAPER

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List of Acronyms, Abbreviations, and Symbols

AEDC	Arnold Engineering Development Center
AFB	Air Force Base
AFH	Air Force Handbook
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFMC	Air Force Materiel Command
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AICUZ	Air Installation Compatible Use Zone
BMP	Best Management Practice
C&D	Construction and Demolition
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DoD	Department of Defense
EA	Environmental Assessment
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
HAZMART	Hazardous Material Pharmacy
HQ	Headquarters
HWMP	Hazardous Waste Management Plan
IRP	Installation Restoration Program
LAN	Local Area Network
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TCA	Tennessee Code Annotated
TDEC	Tennessee Department of Environment and Conservation
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
WQA	Water Quality Act

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1.0 Purpose and Need for Action

1.1 Background

Arnold Air Force Base (AFB) is located in Coffee and Franklin Counties in Middle Tennessee. The Base is approximately 70 miles southeast of Nashville, the state capitol, and near the towns of Manchester, Tullahoma, and Winchester. Arnold AFB is the largest employer in the two-county area (Figure 1-1).

Arnold AFB occupies 39,081 acres, including the 3,632-acre Woods Reservoir and various sectors of improved, semi-improved, and unimproved grounds. The Base has 5,494 acres of cultivated pine forests and 23,053 acres of hardwood forests (Arnold AFB, 2006). Grasslands and early successional habitats in utility rights-of-way provide 2,219 acres of habitat for numerous rare species. Arnold AFB contains 1,894 acres of jurisdictional wetlands. The remaining 4,683 acres are occupied by wildlife food plots, buildings/structures, mowed/bushhogged areas, and other open areas (Arnold AFB, 2007).

1.1.1 Operations

Arnold Engineering Development Center (AEDC), which is located on Arnold AFB, is the most advanced and largest complex of flight simulation test facilities in the world, with 58 aerodynamic and propulsion wind tunnels, rocket and turbine engine test cells, space environmental chambers, arc heaters, ballistic ranges, and other specialized units. Facilities can simulate flight conditions from sea level to altitudes of more than 100,000 feet, and from subsonic velocities to those well over Mach 14.

1.1.2 History

Arnold AFB is named for the late General Henry H. "Hap" Arnold, Commander of the Army Air Forces. In 1949, Congress authorized $100 million for the construction of AEDC. On 25 June 1951, one year after General Arnold's death, President Harry Truman dedicated the AEDC.

1.1.3 Military Mission

The existing military mission is to support the development of aerospace systems by testing hardware in facilities that simulate flight conditions. As part of Arnold AFB's overall mission, the base supports armed forces combat readiness by providing sustained realistic military training environments. Ecosystem management helps maintain natural landscapes for this military training.

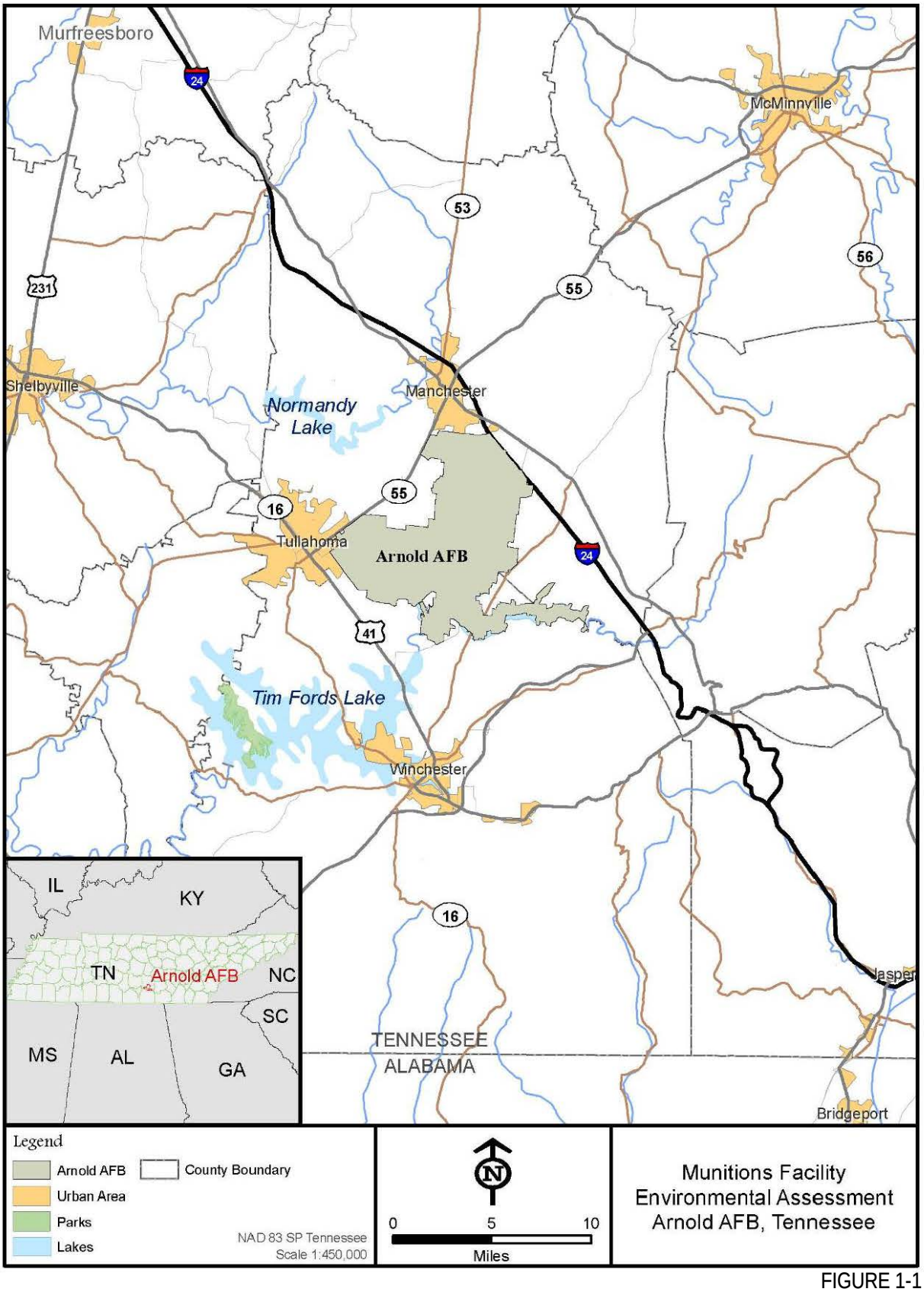

FIGURE 1-1
LOCATION OF ARNOLD AFB, TN
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

1.2 Proposed Action

The Proposed Action is to install a portable duplex building (approximately 44 feet by 27 feet) with steel walls on a concrete pad. The proposed location is west of Building 2228 near Avenue I.

The building will have electrical, potable water, sewage and local area network (LAN) utilities. An access drive and parking area would also be constructed at an area of approximately 2,000 square feet. A fence will also be constructed around the facility and parking apron with an access gate across the driveway entrance.

1.3 Need for Proposed Action

According to Department of Defense (DoD) Standard 6055.9 and Air Force Manual (AFMAN) 91-201 explosive safety standards, a properly sited and designed facility designated for maintenance and inspection of explosive materials and test articles is required for the conduct of such activities. Currently, Arnold AFB has a temporary waiver to conduct maintenance and testing of explosive materials at Building 2228, which is not designed for such activities. The temporary waiver expires in October 2010 (Miller, 2009). This proposed facility is essential for meeting explosive safety standards and directly supports DoD and Air Force mission objectives.

1.4 Applicable Regulatory Requirements, Permits, and Coordination

The following regulations, permits, or coordination may be applicable to the Proposed Action as described in this environmental assessment (EA):

- The National Environmental Policy Act (NEPA) of 1969 and implementing regulations in Title 40 Code of Federal Regulations (CFR), Parts 1500–1508 (40 CFR 1500–1508)
- The National Historic Preservation Act (NHPA) of 1966 (16 United States Code [USC] 470 et seq., as amended) and enabling legislation 36 CFR 800
- 32 CFR 989
- Air Force Instruction (AFI) 91-302
- AFI 32-1052
- AFI 32-7042
- AFI 32-7064
- The Endangered Species Act (ESA) of 1973 (16 USC 1531–1543)

- The Fish and Wildlife Coordination Act (16 USC 661, et seq.)
- Executive Order (EO) 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*
- The Migratory Bird Treaty Act (MBTA) (16 USC 703, et seq.)
- The Clean Water Act (CWA) of 1977 and the Water Quality Act (WQA) of 1987 (33 USC 1251 et seq., as amended)
- EO 11990, *Protection of Wetlands*
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (as amended by the Superfund Amendments and Reauthorization Act [SARA] of 1986)
- The Resource Conservation and Recovery Act (RCRA) of 1976
- The Archeological Resources Protection Act of 1979
- EO 11988, *Floodplain Management*
- The Clean Air Act (CAA) (42 USC 7401 et seq., as amended)
- The Noise Control Act of 1972
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk*

The Air Force published a public notice (Appendix A) in the *Tullahoma News*, *Herald Chronicle*, and *Manchester Times* once per week for four weeks starting on 3 February 2010 notifying the public of the Air Force's intent to sign a Finding of No Significant Impact (FONSI). The Air Force also provided the following agencies copies of the EA for review and comment: Tennessee Department of Environment and Conservation (TDEC) Office of General Counsel, TDEC Division of Water Pollution Control, and TDEC Division of Air Pollution Control.

The public comment and agency review period ended on 3 March 2010. No public or agency comments were received.

1.5 Authority and Scope of the Environmental Assessment

This document was prepared in accordance with the requirements of the NEPA of 1969, the Council on Environmental Quality (CEQ) regulations of 1978, and 32 CFR Part 989.

1.6 Issues Eliminated from Detailed Analysis

The resource areas discussed below have been eliminated from detailed analysis in this document because there is no potential for the Proposed Action to impact these resources.

1.6.1 Air Installation Compatible Use Zone (AICUZ)

Arnold AFB has an active airfield and an exemption from Headquarters (HQ) Air Force Materiel Command (AFMC) for AICUZ because of the limited number and types of flying operations. The proposed project area is not within any accident potential zones and would not impact airfield operations or management. Therefore, AICUZ was eliminated as an issue warranting further analysis.

1.6.2 Land Use

The proposed project area is within the existing munitions storage area. As a result, the Air Force does not anticipate changes in land use designations associated with the Proposed Action, and no impacts to internal or adjacent land uses are expected. Therefore, land use was eliminated as an issue warranting further analysis.

1.6.3 Noise

Construction and demolition (C&D) noise would cause a temporary and short-term increase to the ambient sound environment. Workers associated with the construction activities would be expected to wear appropriate hearing protection as required by the Occupational Safety and Health Administration (OSHA). C&D activities associated with the Proposed Action would be occurring in an area that is well removed from any residential areas and is approximately 1,000 feet away from the nearest building. Additionally, project activities would occur during normal business hours and would not result in evening, early morning, or weekend noise issues. As a result, the Air Force does not anticipate impacts to the noise environment, and noise was eliminated as an issue warranting further analysis.

1.6.4 Safety and Occupational Health

The proposed facility has been sited according to DoD Standard 6055.9 and AFMAN 91-201 explosive safety standards and would be located within the existing, secured munitions storage area. The safety/explosive zone associated with the new facility would be approximately 1,250 feet from the edge of the building and would be limited to the secured AEDC fenced compound. The Air Force does not anticipate any safety impacts to the public or military personnel from the siting and operational aspects of the Proposed Action.

Construction operations and maintenance activities conducted at Arnold AFB are performed in accordance with applicable Air Force safety regulations, published Air Force Technical Orders, and standards prescribed by Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) requirements. Construction and demolition activities on the installation are required to have appropriate job site safety plans, which explain how job safety will be assured throughout the life of the project. Construction and demolition workers are also required to follow applicable OSHA requirements. Occupational health and safety would be governed by the terms of the contract, which may incorporate Air Force regulations and technical orders, AFOSH standards, and OSHA standards. The Air Force does not anticipate impacts to safety, provided that all applicable AFOSH and OSHA requirements are implemented.

Consequently, safety and occupational health was eliminated as an issue warranting further analysis.

1.6.5 Biological Resources

Based on interviews with Arnold AFB personnel and survey information in the installation's *Integrated Natural Resources Management Plan*, no threatened, endangered, or species of concern or habitat are located within or adjacent to the proposed munitions facility action area (McWhite, 2009; U.S. Air Force, 2007). Land clearing and construction activities may have a localized effect on native wildlife species such as squirrels, raccoons, and rabbits. The potential exists for impacts to wildlife from noise and direct encounters (e.g., crushing) with vehicles and equipment. The proposed area represents less than 0.1 percent of the total land area that Arnold AFB maintains; thousands of forested acres would continue to be managed for wildlife value. Any animals disturbed by demolition/construction noise and human presence would likely move to nearby available habitats during noisy activities. Also, existing wildlife are already exposed and habituated to visual and noise disturbances from nearby developed areas and roads. Given the abundance of better quality wildlife habitat on other portions of Arnold AFB and the current environment, there would be no appreciable impacts to biological resources associated with the Proposed Action. Therefore, this issue was not carried forward for detailed analysis.

1.6.6 Cultural Resources

A cultural resources survey of the proposed project area was conducted in 2009 and identified no cultural resources at the location (Chapman, 2009). As a result, the Air Force anticipates no effect to cultural resources from the Proposed Action, and this issue was not carried forward for further analysis. In the event that cultural resources are inadvertently discovered during project activities, project personnel would temporarily halt all work at that location and notify the base cultural resources manager.

1.6.7 Geology

Proposed land clearing and construction activities would be limited to the ground surface, to a depth of several feet for building foundation, etc. As a result, underlying geology is not expected to be impacted by the Proposed Action, and this issue was not carried forward for detailed analysis.

1.6.8 Hydrology

As mentioned previously, proposed land clearing and construction activities would be limited to the ground surface, to a depth of several feet for building foundation, etc. In addition, no surface water courses or bodies are near the proposed site that could be affected by proposed development. As a result, underlying and surface hydrology is not expected to be impacted by the Proposed Action, and this issue was not carried forward for detailed analysis.

1.6.9 Air Quality

The Proposed Action would result in emissions from heavy construction machinery, tractor-trailer rigs, dust (particulate matter) from demolition, and vehicle exhaust from contracted employees' personal vehicles. However, the size and scope of the proposed facility and amount of area to be cleared is relatively small. While construction activities would result in air emissions, these emissions would be considered minor in nature and temporary, concluding along with completion of project activities. Additionally, Arnold AFB is within an attainment area for all criteria pollutants. No new major new or modified stationary emission sources are associated with the proposed action and a Prevention of Significant Deterioration (PSD) review under the CAA would not be required. Consequently, air quality was eliminated as an issue warranting further analysis.

1.6.10 Socioeconomics

Construction expenditures associated with the Proposed Action would likely be concentrated in the local economy, and it is unlikely that any new jobs would be created from the Proposed Action. Construction expenditures, while having a positive effect within the local economy, are not likely to significantly impact the local community. Also, any additional jobs and income as a result of the construction would be temporary and would likely end at the completion of all of the phases of construction. Consequently, the Air Force does not anticipate any additional socioeconomic impacts associated with the Proposed Action, and further analysis is not warranted.

1.6.11 Environmental Justice and Protection of Children

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify community issues of

concern during the NEPA process, particularly those issues relating to decisions that may have an impact on low-income or minority populations. The proposed C&D activities would occur within established areas of Arnold AFB and would not affect communities outside Arnold AFB, to include low-income or minority populations. Therefore, the Air Force does not anticipate impacts associated with environmental justice from the Proposed Action, and further analysis is not warranted.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (*Protection of Children*) was issued in 1997 to identify and address issues that affect the protection of children. According to the EO, all federal agencies must assign a high priority to addressing health and safety risks to children, coordinating research priorities on children's health, and ensuring that their standards take into account special risks to children. The EO states that, "…'environmental health risks and safety risks' mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." As indicated previously, the proposed C&D activities would occur within established areas of Arnold AFB and would not affect communities outside Arnold AFB, to include areas with children. Additionally, access to the construction site would be restricted to job-site personnel only. Therefore, the Air Force does not anticipate impacts associated with protection of children from the Proposed Action, and further analysis is not warranted.

1.6.12 Traffic Flow

The proposed location for the new facility is within the existing munitions storage area. There is minimal traffic in this area, and traffic flow would not be expected to be interrupted by construction activities associated with the Proposed Action. Any potential traffic delays would be temporary in nature, ending once activities have ceased. As a result, the Air Force does not anticipate any significant adverse impacts to transportation.

1.6.13 Utility Infrastructure

There would be a small net increase in installation utility use associated with the proposed project. Existing utility infrastructure would be utilized to the greatest extent possible. While there may be minor utility infrastructure work conducted at the project location, no service interruption would be anticipated.

1.7 Issues Studied in Detail

The resource areas below are discussed in detail in this document:

- Geomorphology and Soils

- Water Quality
- Hazardous Materials

1.8 Document Organization

This EA follows the organization established by the CEQ regulations (40 CFR 1500–1508). This document consists of the following sections:

1.0 Purpose and Need for Action

2.0 Description of the Proposed Action and Alternatives

3.0 Affected Environment

4.0 Environmental Consequences

5.0 Plan, Permit, and Management Requirements

6.0 List of Preparers

7.0 References

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2.0 Description of Proposed Action and Alternatives

As required by federal regulations, this EA addresses the possible environmental impacts of a No Action Alternative and the practicable action alternatives. This section provides a description of the action alternatives and the No Action Alternative and a brief discussion of the impacts associated with each alternative.

2.1 Proposed Action

The Proposed Action is to install a portable duplex building (approximately 44 feet by 27 feet) with steel walls on a concrete pad. The facility would be used to perform initial assembly, bench test, inspection, and minor maintenance of various conventional and nonconventional munitions and their respective components to include explosive bridge wire and rocket motor components.

The building would have electrical, potable water, sewage and LAN utilities. The facility would consist of three large unobstructed work bays, co-located field offices, a large surrounding apron to support vehicle usage, flow-through access, and an overhead hoist system in one bay. The large apron would include an access drive and parking at an area of approximately 2,000 square feet. A security fence would also be constructed around the facility, with an access gate across the facility driveway entrance.

The facility would be constructed in accordance with:

- Air Force Handbook (AFH) 32-1084 – *Facilities Requirements*
- AFMAN 91-201 – *Explosives Safety Standards*
- AFI 31-101 – *The Physical Security Program*
- DoD 6055.9 Standard – *DoD Ammunition and Explosives Safety Standards*

Figure 2-1 shows the proposed layout of the facility, while Figure 2-2 shows the proposed location, which is west of Building 2228 near Avenue I.

FIGURE 2-1
PROPOSED FACILITY LAYOUT
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

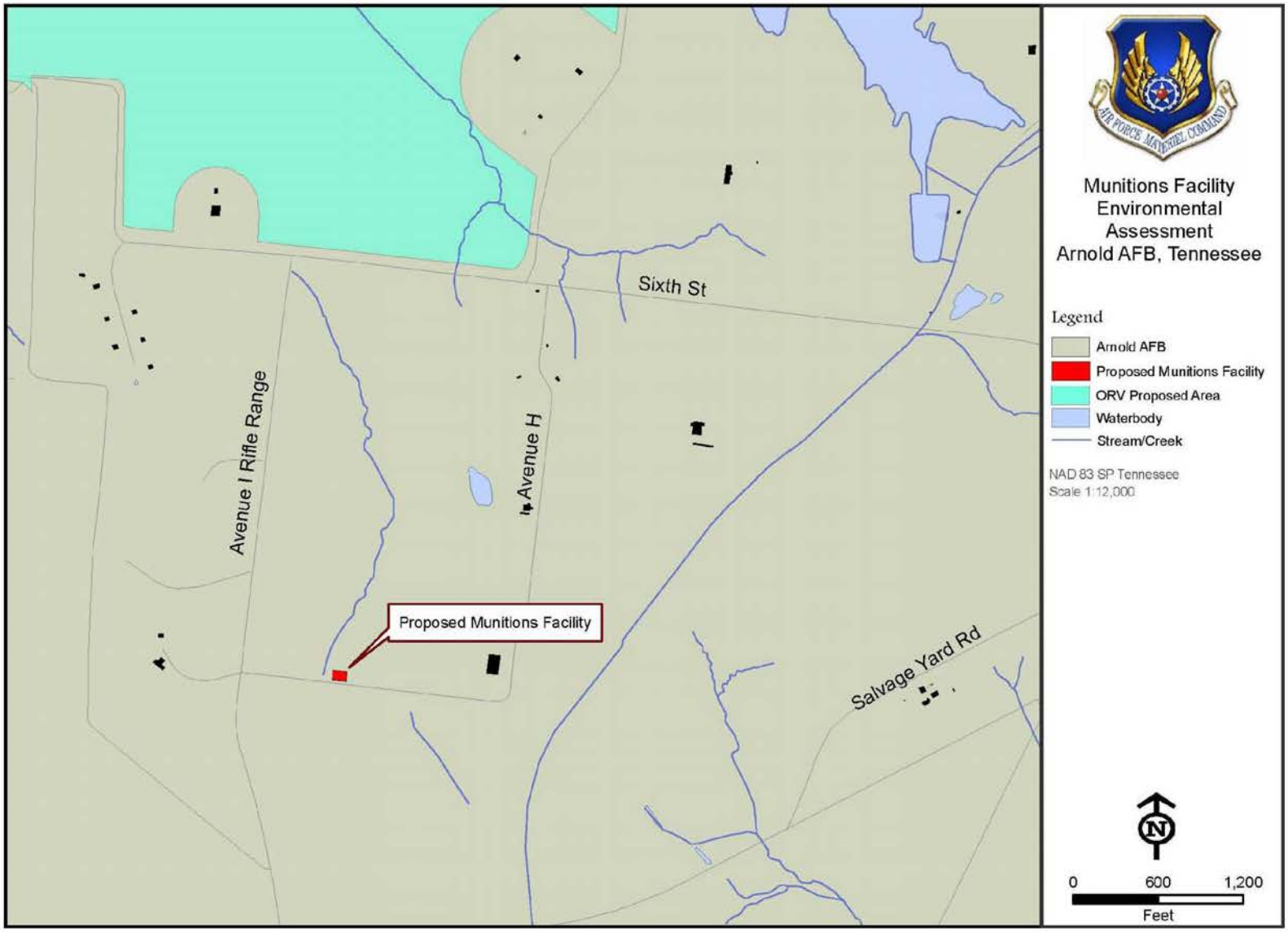

FIGURE 2-2
LOCATION OF PROPOSED MUNITIONS FACILITY AT ARNOLD AFB
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

2.2 No Action Alternative

Under the No Action Alternative, the Proposed Action would not occur. Activities proposed for the new facility would continue to take place at Building 2228; authorization for the use of Building 2228 for these activities expires in 2010. Arnold AFB would not have a properly sited facility in accordance with DoD Standard 6055.9 and AFMAN 91-201 explosive safety standards to provide the capability to maintain and inspect explosive materials and test articles.

Although the No Action Alternative would not meet the purpose and need for the Proposed Action, NEPA-implementing regulations require analysis of the No Action Alternative. Essentially, the impacts associated with the No Action Alternative represent the environmental impacts at the proposed locations if the Proposed Action were not implemented. Under the No Action Alternative, there would be no "Proposed Action-related" impacts, but ongoing and potential future actions not related to the Proposed Action would continue to influence the resources in the area, either adversely or beneficially.

2.3 Comparison of Alternatives Carried Forward

TABLE 2-1
COMPARISON OF ALTERNATIVES
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

Resource Area	*Proposed Action*	*No Action Alternative*
Geomorphology and Soils	The distance of the proposed project from major waterways in conjunction with the well vegetated landscape surrounding the project area serves to minimize the potential for the sedimentation of area streams. In addition, best management practices (BMPs) would be implemented; therefore, no adverse impacts to soils would occur.	No construction activities would occur; therefore, no impacts to soils would occur as a result of this alternative.
Water Quality	Surface disturbance would be less than 1 acre. Proper implementation and maintenance of BMPs would reduce the peak flow and maximum runoff of stormwater. There would be no significant impact to water quality from the construction of the Munitions Maintenance and Inspection Facility or its operation because no surface waters are located on or adjacent to the site and the Air Force would implement BMPs.	No construction activities would occur; therefore, no impacts to water quality would occur.
Hazardous Materials	Hazardous materials would be managed through the hazardous materials pharmacy (HAZMART) and hazardous waste generation would be managed through existing procedures in the *Hazardous Waste Management Plan*. No Installation Restoration Program sites are at or in close proximity to the Proposed Action site.	No impact to hazardous material or hazardous waste would occur.

3.0 Existing Conditions

3.1 Geomorphology and Soils

This section presents information on the general geomorphology, soil environment, and soil erosion potential within the area that could potentially be impacted by the proposed munitions facility at Arnold AFB. The primary issue of concern associated with this project is the construction activity that could potentially assist in the transport of soils caused by stormwater runoff from increased impervious surface areas (i.e., roads, buildings, and compacted soil) and soil erosion.

Depending on their properties and the topography in which they occur, soils have varying susceptibility to erosion. Soil disturbance associated with development may potentially result in erosion and the transport of eroded soils into nearby drainages. The project area is adjacent to a base road and is currently undeveloped.

When undeveloped areas are modified, impervious surfaces (i.e., areas that water cannot seep into, such as roads and paved parking areas) can be created. During rainfall events, water moves across impervious surfaces into seasonal drainages, stormwater drains, and retention basins, and is ultimately transported into local water bodies. The CWA prohibits the deposition of sediments into surface waters. Sediments affect water clarity, decrease oxygen levels in water, and transport pollutants. As soil quality declines (erosion), adverse impacts to on-site and off-site environments increase. Therefore, the maintenance of soil quality is important for efficient and productive land management and utilization. Areas most prone to erosion are identified based on slope, soil type, and vegetative cover.

Geomorphology as applied here refers to local landforms and how they may affect or be affected by the Proposed Action. Arnold AFB is located within the eastern portion of the Highland rim physiographic province (U.S. Department of Agriculture [USDA], 1981). This area is characterized by extensive forests and elevations ranging from 100 meters (about 328 feet) to 400 meters (about 1,312 feet). The topography of the region is gently rolling to strongly rolling with broad upland flats and shallow basin interruptions.

The Proposed Action site is located approximately 656 feet to the east of Rifle Range Road and 1,640 feet north of Wattendorf Memorial Highway on a currently undeveloped area of Arnold AFB. The topography of the proposed project area is moderately flat with slopes of 0 to 2 percent. The landscape is characterized by relatively level land elevation, with a nearby seasonal drainage directly west of the project area.

Proposed land clearing and construction activities would be limited to the ground surface, to a depth of several feet for building foundation, etc. As a result, underlying geology is not expected to be impacted by the Proposed Action, and this issue was not carried forward for detailed analysis.

The predominant soil type found within the proposed construction area is classified as Dickson silt loam, local alluvium phase (USDA, 2009; Figure 3-1). Dickson silt loam consists of very deep, moderately well drained soils, with slowly permeable fragipan in the subsoil. These soils are strongly acidic soils formed in a silty mantle 2 to 4 feet thick, with an underlying residuum of limestone. Depth to seasonal water table is approximately 18 to 36 inches to the depth of the fragipan. Silty loam comprises the majority of the entire series; at 0 to 48 inches below the ground (NRCS, 2009). Slopes are primarily 0 to 12 percent throughout but only 0 to 2 percent within the project area. Dickson silt loam, 0 to 2 percent slopes have slight erosion potential.

3.2 Water Quality

Surface water resources include lakes, rivers, and streams and are important for a variety of reasons including irrigation, power generation, recreation, flood control, and human health. Under the CWA, it is illegal to discharge pollutants from a point source into any surface water without a National Pollutant Discharge Elimination System (NPDES) permit. The U.S. Environmental Protection Agency (USEPA) has the authority to set standards for the quality of wastewater discharges. The goal of the CWA Section 402 is the "restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters." Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. The State of Tennessee has legal authority to implement and enforce the provisions of the CWA, while the USEPA retains oversight responsibilities.

The Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control is responsible for administration of the Tennessee Water Quality Control Act of 1977 (Tennessee Code Annotated [TCA] 69-3-101). On an annual basis, the Division monitors, analyzes, and reports on the quality of Tennessee's water. TDEC uses a watershed approach under the concept that many water quality problems, like the accumulation of pollutants or nonpoint source pollution, are best managed at the watershed level.

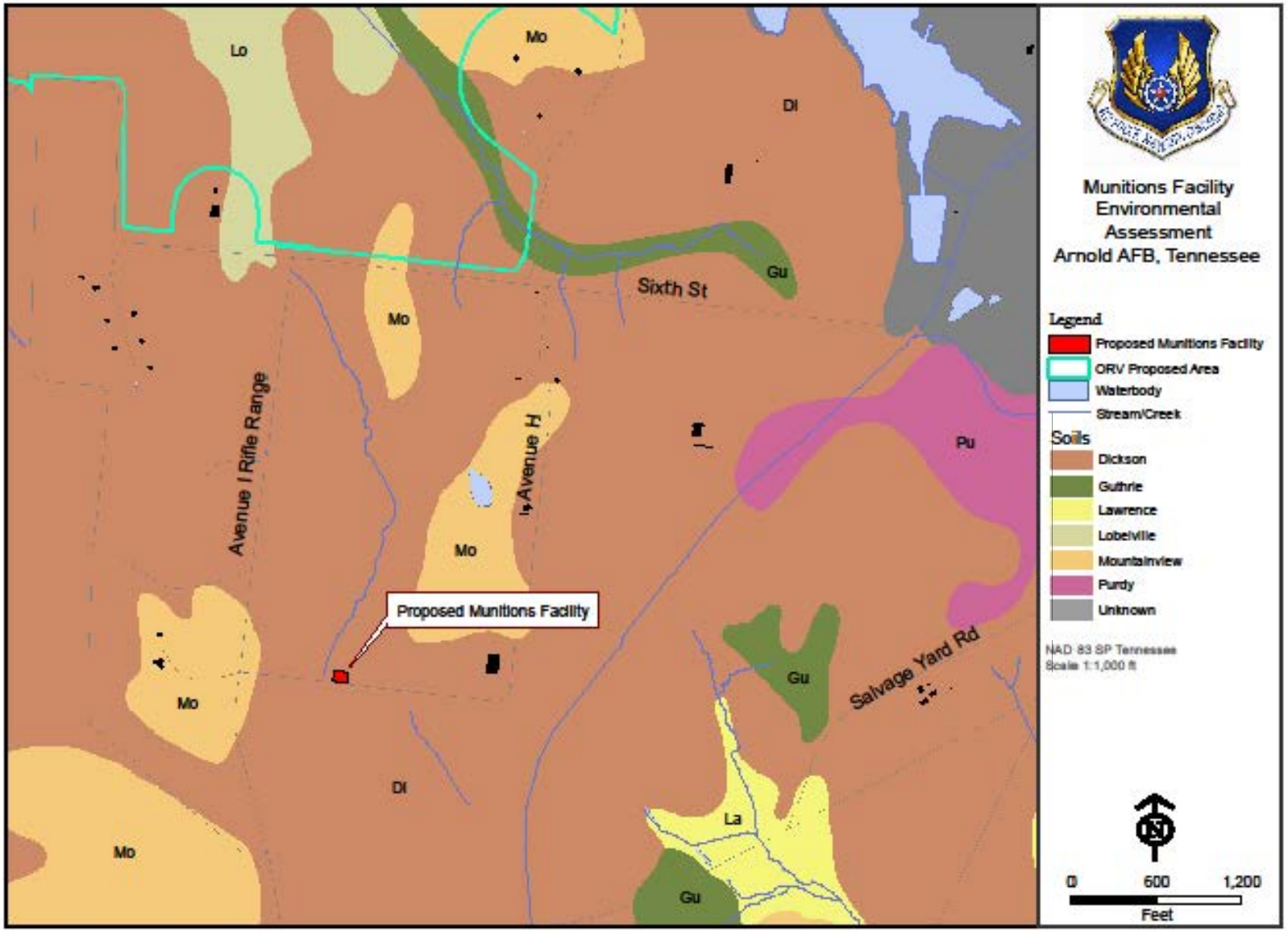

FIGURE 3-1
SOILS NEAR THE PROPOSED ACTION SITE
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

Arnold AFB contains portions of both the Upper Elk River and Upper Duck River watersheds. Section 305(b) of the CWA requires states to report the status of water quality every two years; Section 303(d) of the CWA provides a list of waters that fail to support some or all of their classified uses. Once a stream is placed on the 303(d) list, it is considered a priority for water quality improvement efforts. If a stream is on the 303(d) list, the Division of Water Pollution Control cannot use its regulatory authority to allow additional sources of the same pollutant(s) for which it is listed (TDEC, 2006). The Upper Duck River watershed contains 46 impacted waterbodies and the Upper Elk River watershed contains 22 impacted waterbodies on the 303(d) list (TDEC, 2008). The closest surface water to the Proposed Action site is a stream/creek approximately 100 feet to the west (Figure 3-2).

Floodplains are defined by EO 11988, *Floodplain Management,* as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the area subject to a one percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). EO 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. No floodplains are within the area surrounding the Proposed Action site (Figure 3-2).

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and USEPA as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. The USACE, the lead agency in protecting wetland resources, maintains jurisdiction over federal wetlands (33 CFR 328.3) under Section 404 of the CWA and Section 10 of the Rivers and Harbors Act. In addition, EO 11990, *Protection of Wetlands*, requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. EO 11990 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. No wetlands are within the area surrounding the Proposed Action site (Figure 3-2).

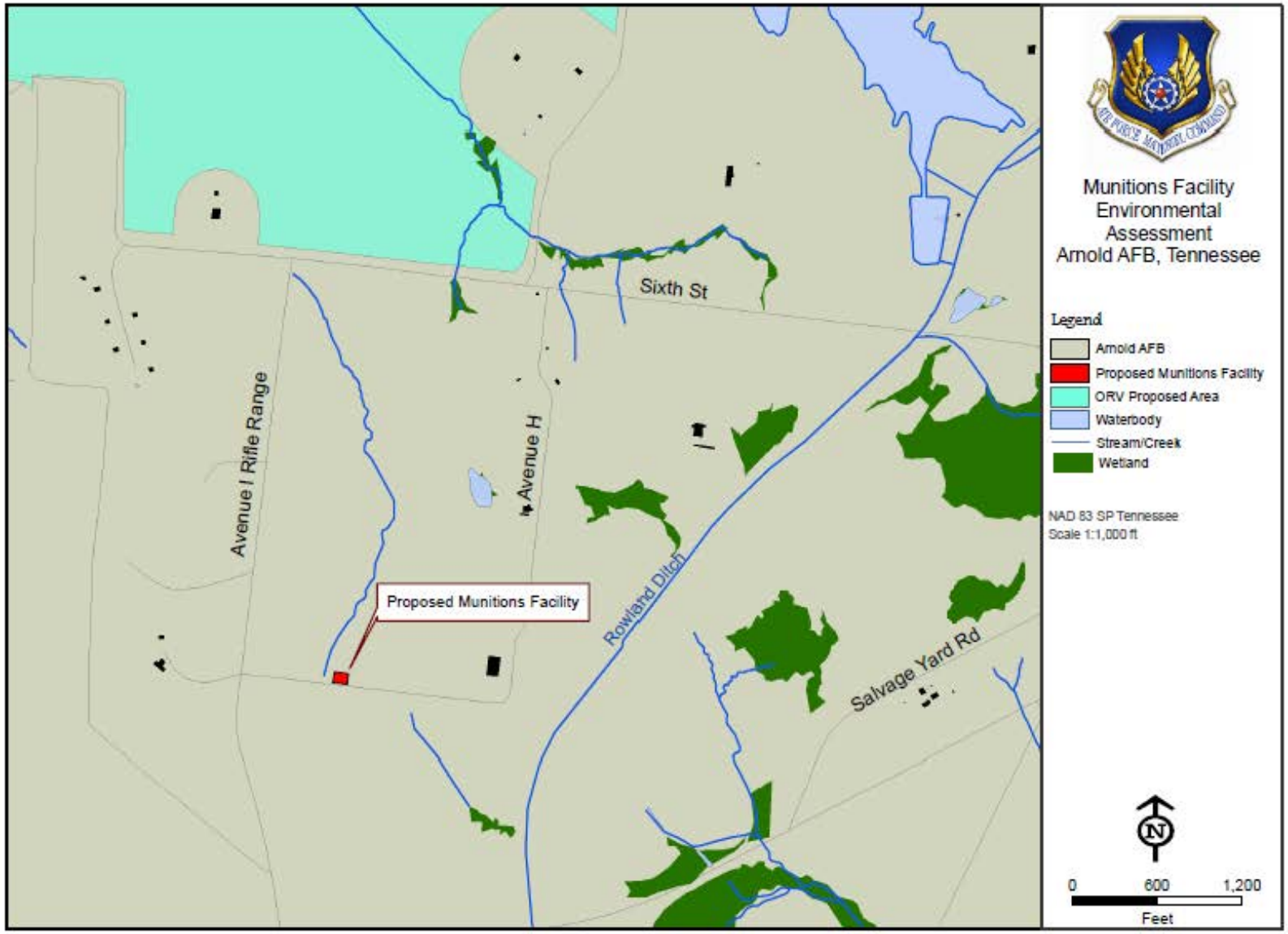

FIGURE 3-2
WATER RESOURCES NEAR THE PROPOSED ACTION SITE
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

3.3 Hazardous Materials

Hazardous materials listed under CERCLA and the Emergency Planning and Community Right-to-Know Act (EPCRA) are defined as any substance that, due to quantity, concentration, or physical, chemical or infectious characteristics, may present substantial danger to public health, welfare, or the environment. Examples of hazardous materials include petroleum products and paint-related products. Arnold AFB manages hazardous materials on the installation through use of a HAZMART (a hazardous material pharmacy system). Within the HAZMART, an automated environmental tracking tool (computer database) tracks hazardous materials purchases, distribution, and use from "cradle to grave."

In addition to the HAZMART, Arnold AFB has a *Hazardous Waste Management Plan* (HWMP), which establishes the proper procedure for handling, managing, and disposing of all hazardous wastes. Hazardous wastes that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR 261. Under RCRA, Arnold AFB is a Large Quantity Generator of hazardous waste (generating 2,200 pounds per month or greater) and maintains a TDEC-permitted storage facility.

The DoD Environmental Restoration Program (ERP)/Installation Restoration Program (IRP) is designed to identify, evaluate, and remediate sites where activities may threaten public health, welfare, or the environment. IRP sites are regulated under the Arnold AFB RCRA Corrective Action Permit. Figure 3-3 identifies IRP sites within the vicinity of the Proposed Action site; however, the closest site is over 1,200 feet to the east.

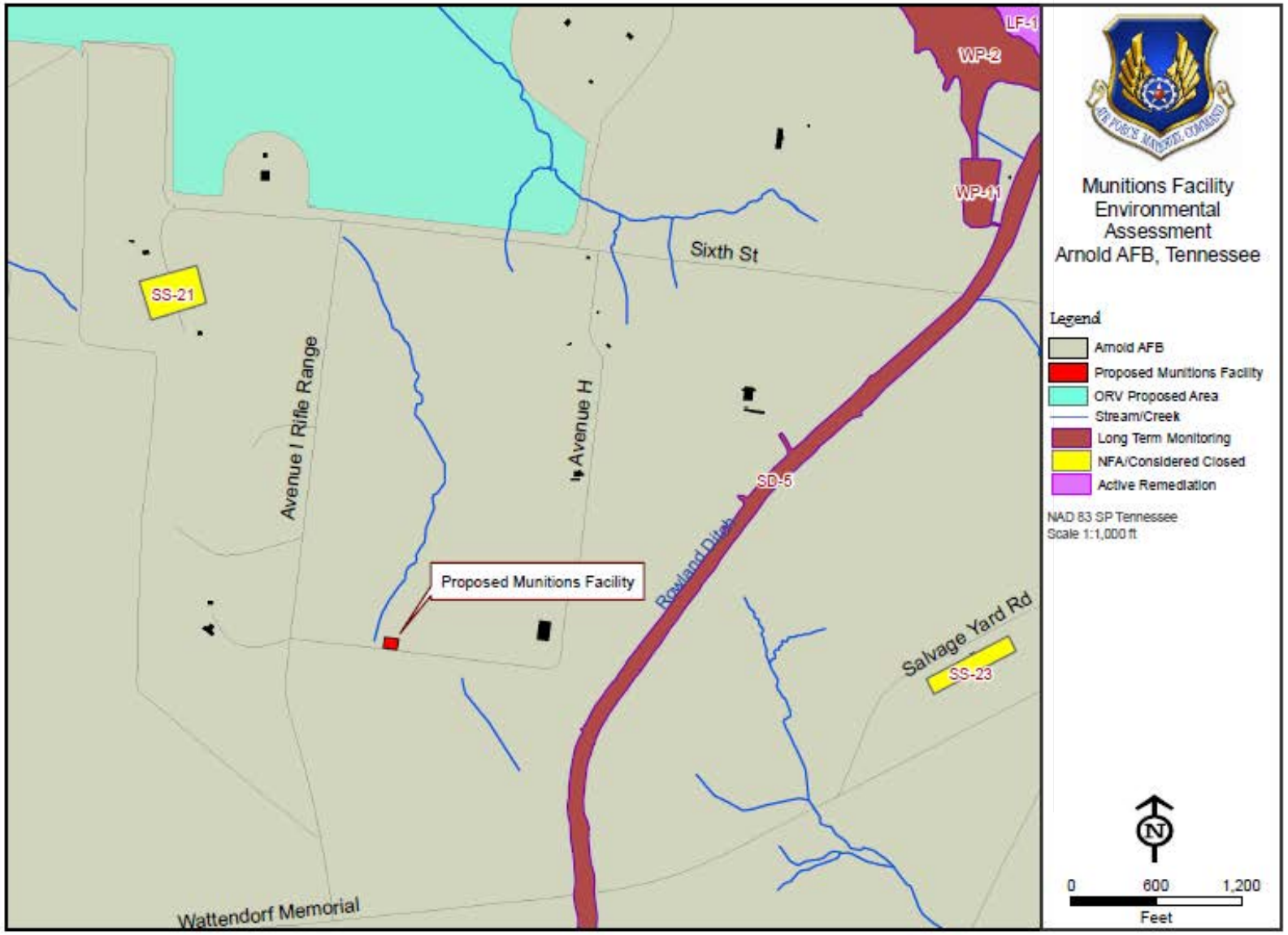

FIGURE 3-3
INSTALLATION RESTORATION SITES NEAR THE PROPOSED ACTION SITE
Munitions Maintenance and Inspection Facility at Arnold Air Force Base, Tennessee

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4.0 Environmental Consequences

4.1 Geomorphology and Soils

4.1.1 Proposed Action

The Proposed Action would not adversely impact soil resources. The moderately permeable Dickson soils and relatively flat terrain at the project site minimize potential erosion. Minimal impacts are expected to result from landscape disturbance. Soil excavations, removal of vegetation, grading, and construction activities have the potential to disturb soil stability and increase the susceptibility of soil particles to suspension and transport by wind and water. However, the distance of the proposed project from major waterways in conjunction with the well vegetated landscape surrounding the project area serves to further minimize the potential for the sedimentation of area streams. It is expected that natural areas disturbed during construction would be landscaped or returned to a natural state within one year. In addition, land clearing and site preparation would follow best management practices (BMPs) as discussed in Chapter 5.

4.1.2 No Action Alternative

Under the No Action Alternative, no new structures would be constructed. No impacts to soils would occur as a result of this alternative.

4.2 Water Quality

4.2.1 Proposed Action

Water quality impacts include the potential for increases in stormwater runoff rate and volume resulting from increased impervious surface area, as well as temporary increases in sediment and pollutant runoff during construction. An impact to water quality would be significant if it would: (1) adversely affect water quality or endanger public health by creating or worsening adverse health hazard conditions; (2) threaten or damage unique hydrologic characteristics; or (3) violate established laws or regulations that have been adopted to protect or manage water quality of an area.

The Proposed Action construction would increase impervious area by less than 1 acre; due to the proposed scope of the construction project (i.e., disturbance of less than 1 acre), Arnold AFB would not need an NPDES stormwater construction permit for the Proposed Action. This action would however increase the rate and volume of stormwater runoff, which would in turn likely transport heavy metals from roads and

parking lots and herbicides and pesticides from urban land uses. The construction may also potentially exacerbate soil erosion. However, no surface waters including wetlands and floodplains are located on or adjacent to the site. The closest surface waters to the Proposed Action site are over 100 feet away. Proper implementation and maintenance of BMPs would reduce the peak flow and maximum runoff of stormwater (details are provided in Section 5.0). There would be no significant impact to water quality from the construction of the facility or its operation because no surface waters are located on or adjacent to the site and the Air Force would implement BMPs.

4.2.2 No Action Alternative

Under the No Action Alternative, no construction activities would occur; therefore, no impacts to water quality would occur.

4.3 Hazardous Materials

4.3.1 Proposed Action

The potential for environmental impacts as a result of hazardous materials and solid and hazardous waste is determined by estimating the quantity generated as a result of the Proposed Action and assessing the capability of the existing programs to handle any increased quantities. In addition, the potential impact to IRP sites is based on the proximity and likelihood of disturbance.

During the site preparation and construction of the facility, hazardous materials would be present, and hazardous wastes such as paints, paint thinners, adhesives, and glues would be generated. Hazardous materials used during construction would be managed through the Arnold AFB HAZMART. Hazardous wastes generated during this same time period would be managed within the existing procedures outlined in the existing Arnold AFB HWMP.

Additionally, the normal operations of the facility would likely use hazardous materials and generate hazardous waste. Hazardous materials would be managed through the HAZMART. Given the current types and levels of generated hazardous waste at the Base, the hazardous waste generated from the new inspection facility would not change the Large Quantity Generator status. In addition, all hazardous waste would be managed within the existing procedures of the Arnold AFB HWMP. Thus, no adverse impacts associated with the handling and disposal of hazardous materials/wastes would occur.

No IRP sites are at or adjacent to the Proposed Action site; therefore, no impacts to IRP sites would occur.

4.3.2 No Action Alternative

Under the No Action Alternative, no impact to hazardous material or hazardous waste would occur.

4.4 Cumulative Impacts

According to the CEQ regulations, cumulative impact analysis in an environmental assessment should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.8). Cumulative effects may occur when there is a relationship between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally would tend to offer a higher potential for cumulative effects.

No other projects have been identified as either in close proximity to the Proposed Action or as having a cumulative impact on shared resources.

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5.0 Plan, Permit, and Management Requirements

No plan or permit requirements would be necessary for the Proposed Action.

The proponent would ensure that the construction contractor implements the following soils BMPs in addition to other situation-appropriate methods as per the *Tennessee Erosion and Sediment Control Handbook* (TDEC, 2002):

- Implement silt fences and hay bales construction to avoid soil run-off into the nearby drainage.
- Inspect BMPs on a weekly basis and after rain events. Replace fencing as needed.
- In permits and site plan designs, include site-specific management requirements for erosion and sediment control.

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6.0 List of Preparers

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B.A. Liberal Arts
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7.0 References

Chapman, S., 2009. Personal communication between Shawn Chapman (Arnold AFB Cultural Resource Manager) and SAIC regarding potential cultural resources at the proposed munitions facility location. September 2009.

McWhite, R., 2009. Personal communication between Richard McWhite (Arnold AFB Natural Resource Manager) and SAIC regarding potential threatened, endangered, and sensitive species at the proposed munitions facility location. September 2009.

Miller, MSGT R., 2009. Personal communication between MSGT Ryan Miller (Arnold AFB) and SAIC regarding the proposed munitions facility. September 2009.

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APPENDIX A

PUBLIC/AGENCY INVOLVEMENT

Notice of Intent to Sign
A Finding of No Significant Impact
(Munitions Maintenance and Inspection Facility Arnold Engineering Development Center)

A Draft Finding of No Significant Impact (FONSI) has been prepared in accordance with 32 Code of Federal Regulations Part 989, *Environmental Impact Analysis Process*, and the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190, 42 United States Code Sections 4321–4347). NEPA mandates that federal entities consider and document environmental effects of all proposed actions. The Proposed Action is to install a portable duplex building (approximately 44 feet by 27 feet) with steel walls on a concrete pad. The facility would be used to perform initial assembly, bench test, inspection, and minor maintenance of various conventional and nonconventional munitions and their respective components to include explosive bridge wire and rocket motor components. The building would have electrical, potable water, sewage, and local area network (LAN) utilities. The facility would consist of a work bay, field office and a large surrounding apron to support vehicle usage. The large apron would include an access drive and parking at an area of approximately 2,000 square feet. A security fence would also be constructed around the facility, with an access gate across the facility driveway entrance.

The Draft FONSI documents that there has been a conscious identification and evaluation of the Proposed Action alternative and a No Action alternative, which would have no significant impact on the human or natural environment. The identification and evaluation of the alternatives were accomplished through the preparation of an Environmental Assessment (EA).

The Draft FONSI and EA are available for public review and comment. Copies of the Draft FONSI and EA are available by contacting Arnold Air Force Base Public Affairs at 931-454-4204. Comments may be submitted in writing to the following address:

704th CES/CEA
ATTN: Richard McWhite, FONSI/EA Comments
100 Kindel Drive, Suite B307
Arnold AFB, TN 37389-2307

It is the intent of the Air Force to sign the FONSI no earlier than 3 March 2010.

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